What is claimed is:

1. A heat exchanger comprising:

tubes in which fluid flows; and

fins which are provided on outer surfaces of the tubes and increase a heat exchanging area with air flowing around the tubes;

wherein the fin has substantially plate-shaped plane portions and collision walls formed by cutting and raising up parts of the plane portion at an angle of substantially 90 degrees; and

wherein groups of a plurality of the collision walls are formed so as to be substantially symmetric with each other in an air flow direction.

2. A heat exchanger, as set forth in claim 1, wherein the collision walls and parts of the plane portion continuously connected to the collision walls form substantially L sectional shapes, and wherein the substantially L sectional shapes on an upstream side of an air flow and the substantially L sectional shapes on a downstream side of the air flow are in a substantially symmetric relationship with each other.

3. A heat exchanger comprising:

tubes in which a fluid flows; and

fins which are provided on outer surfaces of the tubes and increase a heat exchanging area with air flowing around the tubes;

wherein the fin has substantially plate-shaped plane portions and collision walls formed by cutting and raising up parts of the plane portion; and

wherein when a ratio D/C between a length C of the fin orthogonal to the air flow direction and a length D of the collision walls orthogonal to the air flow direction is assumed to be a slit length ratio E, the slit length ratio E is set within a range not less than 0.775 and not larger than 0.995.

4. A heat exchanger, as set forth in claim 3, wherein the slit length ratio E is set within a range of

not less than 0.810 and not larger than 0.980.

5. A heat exchanger, as set forth in claim 1;

wherein the collision walls and slit pieces of the plane portion continuously connected to the collision walls form L-shaped sections; and

wherein the L-shaped sections on an upstream side of an air flow and the L-shaped sections on a downstream side of the air flow are arranged substantially symmetrically with each other with respect to a virtual plane perpendicular to the plane portions.

6. A heat exchanger, as set forth in claim 3;

wherein the collision walls and slit pieces of the plane portion continuously connected to the collision walls form L-shaped sections; and

wherein the L-shaped sections on an upstream side of an air flow and the L-shaped sections on a downstream side of the air flow are arranged substantially symmetrically with each other with respect to a virtual plane perpendicular to the plane portions.

7. A heat exchanger, as set forth in claim 1, wherein some of a plurality of the collision walls arranged on the upstream side of the air flow are provided with an angle height H higher than that of the other collision walls and all of a plurality of the collision walls arranged on the downstream side of the air flow are provided with an equal angle height H.

8. A heat exchanger, as set forth in claim 3, wherein some of a plurality of the collision walls arranged on the upstream side of the air flow are provided with an angle height H higher than that of the other collision walls and all of a plurality of the collision walls arranged on the downstream side of the air flow are provided with an equal angle height H.

9. A heat exchanger, as set forth in claim 1;

wherein the angle height H of some of a plurality of the collision walls arranged on the upstream side of the air flow becomes higher toward a downstream

direction of the air flow; and

wherein angle height h of some of a plurality of the collision walls arranged on the downstream side of the air flow is lower than that h of the collision wall arranged on a most downstream side in a plurality of the collision walls arranged on the upstream side of the air flow.

10. A heat exchanger, as set forth in claim 3;

wherein the angle height H of some of a plurality of the collision walls arranged on the upstream side of the air flow becomes higher toward a downstream direction of the air flow; and

wherein angle height h of some of a plurality of the collision walls arranged on the downstream side of the air flow is lower than that h of the collision wall arranged on a most downstream side in a plurality of the collision walls arranged on the upstream side of the air flow.

11. A heat exchanger, as set forth in claim 1, wherein the fins are corrugated fins formed in a wave shape.

12. A heat exchanger, as set forth in claim 3, wherein the fins are corrugated fins formed in a wave shape.

13. A heat exchanger, as set forth in claim 1, wherein the fins are plate fins formed in a plane shape.

14. A heat exchanger, as set forth in claim 3, wherein the fins are plate fins formed in a plane shape.

15. A heat exchanger, as set forth in claim 1, wherein a protrusion protruding to an air flow upstream side from an end position of the tube is formed on the fin and the collision walls are also formed on the protrusion.

16. A heat exchanger, as set forth in claim 3, wherein a protrusion protruding to an air flow upstream side from an end position of the tube is formed on the fin and the collision walls are also formed on the

protrusion.

17. A heat exchanger, as set forth in claim 15, wherein at least two of the collision walls are also formed on the protrusion.

18. A heat exchanger, as set forth in claim 16, wherein at least two of the collision walls are also formed on the protrusion.

19. A heat exchanger, as set forth in claim 15, wherein a downstream end in an air flow direction of the fin is arranged not to protrude from a downstream end in the air flow direction of the tube.

20. A heat exchanger, as set forth in claim 16, wherein a downstream end in an air flow direction of the fin is arranged not to protrude from a downstream end in the air flow direction of the tube.

21. A heat transfer member made of a thin plate member, dipped in fluid and thereby supplying or receiving the heat between it and the fluid,

wherein it comprises angle portions cut and raised up from the thin plate member, and plane portions having a plurality of heat exchanging portions comprising slit pieces continuously connected to root portions of the angle portions, and

wherein angle height H of the angle portions is not lower than 0.02 mm and is not higher than 0.4 mm, and pitch dimension P between the heat exchanging portions adjacent each other in a fluid flowing direction is not lower than 0.02 mm and is not higher than 0.75 mm.

22. A heat transfer member made of a thin plate member, dipped in fluid and thereby supplying or receiving the heat between it and the fluid,

wherein it comprises angle portions cut and raised up from the thin plate member, and plane portions having a plurality of heat exchanging portions comprising slit pieces continuously connected to root portions of the angle portions, and

wherein an angle height H of the angle

portions is not lower than 0.06 mm and is not higher than 0.36 mm, and pitch dimension P between the heat exchanging portions adjacent each other in a fluid flowing direction is not lower than 0.08 mm and is not higher than 0.68 mm.

23. A heat transfer member, as set forth in claim 21, wherein a raised angle θ of the angle portions is not smaller than 40 degrees and is not larger than 140 degrees.

24. A heat transfer member, as set forth in claim 22, wherein a raised angle θ of the angle portions is not smaller than 40 degrees and is not larger than 140 degrees.

25. A heat transfer member, as set forth in claim 21, wherein the angle portions are cut and raised up in a curved shape from the thin plate member.

26. A heat transfer member, as set forth in claim 22, wherein the angle portions are cut and raised up in a curved shape from the thin plate member.

27. A heat transfer member, as set forth in claim 21, wherein a ratio H/L between the angle height H and dimension L of portions, parallel to the fluid flow direction, of the heat exchange portions is not less than 0.5 and is not more than 2.2.

28. A heat transfer member, as set forth in claim 22, wherein a ratio H/L between the angle height H and dimension L of portions, parallel to the fluid flow direction, of the heat exchange portions is not less than 0.5 and is not more than 2.2.

29. A heat transfer member, as set forth in claim 21, wherein a relationship between a sectional shape of the heat exchanging portions on an upstream side of a fluid flow and a sectional shape of the heat exchanging portions on a downstream side of the fluid flow is arranged substantially symmetrically with each other.

30. A heat transfer member, as set forth in claim

22, wherein a relationship between a sectional shape of the heat exchanging portions on an upstream side of a fluid flow and a sectional shape of the heat exchanging portions on a downstream side of the fluid flow is arranged substantially symmetrically with each other.

31. A heat transfer member, as set forth in claim 21, wherein the heat exchange portions are formed on the plane portions so as to align in a row in the fluid flowing direction.

32. A heat transfer member, as set forth in claim 22, wherein the heat exchange portions are formed on the plane portions so as to align in a row in the fluid flowing direction.

33. A heat transfer member, as set forth in claim 31, wherein number of the heat exchanging portions is larger than a value B/0.75 when a value B is length of a portion, parallel to the fluid flowing direction, of the plane portions and is expressed in a unit of centimeter.

34. A heat transfer member, as set forth in claim 32, wherein number of the heat exchanging portions is larger than a value B/0.75 when a value B is length of a portion, parallel to the fluid flowing direction, of the plane portions and is expressed in a unit of centimeter.

35. A heat transfer member, as set forth in claim 21, wherein at least a flat portion without the angle portion is provided between the heat exchange portions adjacent each other in the fluid flowing direction.

36. A heat transfer member, as set forth in claim 22, wherein at least a flat portion without the angle portion is provided between the heat exchange portions adjacent each other in the fluid flowing direction.

37. A heat transfer member, as set forth in claim 35, wherein dimension B of a portion, parallel to a fluid flowing direction, of the plane portions is not smaller than 5 mm and is not larger than 25 mm and

dimension Cn of a portion, parallel to the fluid flowing direction, of the flat portions is

predetermined and is smaller than 1 mm.

38. A heat transfer member, as set forth in claim 36, wherein dimension B of a portion, parallel to a fluid flowing direction, of the plane portions is not smaller than 5 mm and is not larger than 25 mm and

dimension Cn of a portion, parallel to the fluid flowing direction, of the flat portions is predetermined and is smaller than 1 mm.

39. A heat transfer member, as set forth in claim 35, wherein dimension B of a portion, parallel to a fluid flowing direction, of the plane portions is larger than 25 mm and is not larger than 50 mm and

dimension Cn of a portion, parallel to the fluid flowing direction, of the flat portions is not smaller than 1 mm and is not larger than 20 mm.

40. A heat transfer member, as set forth in claim 36, wherein dimension B of a portion, parallel to a fluid flowing direction, of the plane portions is larger than 25 mm and is not larger than 50 mm and

dimension Cn of a portion, parallel to the fluid flowing direction, of the flat portions is not smaller than 1 mm and is not larger than 20 mm.

41. A heat transfer member, as set forth in claim 21, wherein when a ratio D/C between a length C of a thin plate member orthogonal to the fluid flow direction and a length D of the angle portions orthogonal to the fluid flow direction is assumed to be a slit length ratio E, the slit length ratio E is set within a range not less than 0.775 and not larger than 0.995.

42. A heat transfer member, as set forth in claim 22, wherein when a ratio D/C between a length C of a thin plate member orthogonal to the fluid flow direction and a length D of the angle portions orthogonal to the fluid flow direction is assumed to be a slit length ratio E, the slit length ratio E is set within a range not less than 0.775 and not larger than 0.995.

43. A heat transfer member made of a thin plate

member, dipped in fluid and thereby supplying or receiving the heat between it and the fluid;

wherein it comprises a plane portion having a plurality of heat exchanging portions which comprises angle portions cut and raised up from the thin plate member and slit pieces continuously connected to root portions of the angle portions; and

wherein when a ratio D/C between a length C of a thin plate member orthogonal to the fluid flow direction and a length D of the angle portions orthogonal to the fluid flow direction is assumed to be a slit length ratio E, the slit length ratio E is set within a range not less than 0.775 and not larger than 0.995.

44. A heat transfer member, as set forth in claim 41, wherein the slit length ratio E is set within a range not less than 0.810 and not larger than 0.980.

45. A heat transfer member, as set forth in claim 42, wherein the slit length ratio E is set within a range not less than 0.810 and not larger than 0.980.

46. A heat transfer member, as set forth in claim 43, wherein the slit length ratio E is set within a range not less than 0.810 and not larger than 0.980.